

Listing of all claims:

1 1. (Previously Amended) An apparatus for
2 detecting a seal on a moving film, comprising;
3 a force transmitter, disposed to transmit a force
4 from the film, wherein the force is created when the film
5 moves with respect to the force transmitter;
6 a force sensor disposed to receive the transmitted
7 force and provide a force signal in response thereto; and
8 a controller, disposed to receive the force signal
9 and provide a seal signal in response thereto.

1 2. The apparatus of claim 1, wherein the force sensor
2 is an acoustic sensor.

1 3. The apparatus of claim 1, wherein the force sensor
2 is a mechanical sensor.

1 4. The apparatus of claim 1, wherein the force sensor
2 is a vibration sensor.

1 5. The apparatus of claim 1, further comprising an
2 anvil disposed on a first side of a film path, wherein the force
3 transmitter is disposed on a second side of the film path.

1 6. The apparatus of claim 1, wherein the force sensor
2 is a piezoelectric sensor.

1 7. The apparatus of claim 5, wherein the force
2 transmitter is a quill disposed near a path of the film.

1 8. The apparatus of claim 6, wherein the quill is
2 rigid.

1 9. The apparatus of claim 7, wherein the quill is
2 comprised of stainless steel.

1 10. The apparatus of claim 6, wherein the quill is
2 angled in a downstream film path direction, relative to normal to
3 the film path.

1 11. The apparatus of claim 10, wherein the quill
2 includes a radius surface abutting the film path, and the quill
3 is held against the film path by a spring force.

1 12. The apparatus of claim 5, wherein the controller
2 includes an amplitude comparator that receives the force signal
3 and an amplitude threshold.

1 13. The apparatus of claim 5, wherein the controller
2 includes a rise-time comparator that receives the force signal
3 and a rise-time threshold.

1 14. The apparatus of claim 1, wherein the controller
2 includes a window circuit.

1 15. (Previously Amended) A method for detecting a
2 seal on a moving film, comprising;
3 creating a force when the film moves relative to a
4 sensor;
5 providing a force signal responsive to the seal;
6 and
7 detecting the force and providing a seal signal in
8 response thereto.

1 16. The method of claim 15, further comprising
2 transmitting a force from the film.

1 17. The method of claim 15, wherein providing the
2 force signal includes detecting an acoustic signal.

1 18. The method of claim 16, wherein providing the
2 force signal includes detecting a mechanical signal.

1 19. The method of claim 16, wherein providing a force
2 signal includes sensing a vibration.

1 20. The method of claim 15, further comprising
2 transmitting the force with a quill disposed near a path of the
3 film.

1 21. The method of claim 15, wherein providing a seal
2 signal includes comparing an amplitude of the force with a
3 threshold.

1 22. The method of claim 21, wherein providing a seal
2 signal includes making the comparison during a window.

1 23. The method of claim 22, wherein providing a seal
2 signal includes comparing a rise-time of the force with a
3 threshold.

1 24. (Previously Amended) An apparatus for
2 detecting a seal on a moving film, comprising;
3 means for providing a force signal in response to
4 the seal and a force, wherein the force is created when the
5 film moves;

6 means for detecting the force signal, coupled to
7 the means for providing a force signal; and
8 means for providing a seal signal in response to
9 the force signal, coupled to the means for detecting.

1 25. The apparatus of claim 24, further comprising
2 means for transmitting a force from the film to the means for
3 detecting, coupled to the means for detecting.

1 26. The apparatus of claim 25, wherein the means for
2 detecting includes means for detecting an acoustic signal.

1 27. The apparatus of claim 25, wherein the means for
2 detecting includes means for detecting a mechanical signal.

1 28. The apparatus of claim 25, wherein the means for
2 detecting includes means for detecting a vibration signal.

1 29. The apparatus of claim 25, wherein the means for
2 providing a seal signal includes means for comparing an amplitude
3 of the force with a threshold.

1 30. The apparatus of claim 29, wherein the means for
2 providing a seal signal includes means for making the comparison
3 during a window.

1 31. The apparatus of claim 30, wherein the means for
2 providing a seal signal includes means for comparing a rise-time
3 of the force with a threshold.

1 32. (Previously Amended) A machine, comprising;

2 a force transmitter, disposed to transmit a force
3 responsive to a seal on a bag, wherein the force is created
4 as the bag moves relative to the transmitter;
5 a force sensor disposed to receive the transmitted
6 force and provide a force signal in response thereto;
7 at least one upstream processing device, located
8 upstream of the force transmitter;
9 at least one downstream processing device, located
10 downstream of the force transmitter; and
11 a controller, disposed to receive the force signal
12 and provide a seal signal in response thereto.

1 33. The apparatus of claim 32, wherein the force
2 sensor is a mechanical sensor.

1 34. The apparatus of claim 32, further comprising an
2 anvil disposed on a first side of a film path, wherein the force
3 transmitter is disposed on a second side of the film path.

1 35. The apparatus of claim 34, wherein the force
2 sensor is a piezoelectric sensor.

1 36. The apparatus of claim 35, wherein the force
2 transmitter is a quill disposed near a path of the film.

1 37. The apparatus of claim 36, wherein the quill is
2 angled downstream.

1 38. The apparatus of claim 37, wherein the quill
2 includes a radius surface abutting the film path, and the quill
3 is held against the film path by a spring force.

1 39. The apparatus of claim 38, wherein the controller
2 includes a window circuit.

1 40. The apparatus of claim 32, wherein one of the at
2 least one downstream devices is registered to the seal.

1 41. The apparatus of claim 40, wherein one of the at
2 least one downstream devices includes a knife.

1 42. The apparatus of claim 40, wherein one of the at
2 least one downstream devices and the force transmitter are in a
3 common tension zone.

1 43. (Previously Amended) A method for processing
2 a bag, comprising;
3 transporting the film from a first processing
4 device to a seal sensing location, and past the seal sensing
5 location;
6 providing a force signal responsive to the seal
7 and a force at the seal sensing location, wherein the force
8 is created by the seal moving;
9 detecting the force and providing a seal signal in
10 response thereto;
11 transporting the film to a second processing
12 device.

1 44. The method of claim 43, further comprising
2 transmitting a force from the film.

1 45. The method of claim 44, wherein providing the
2 force signal includes detecting a mechanical signal.

1 46. The method of claim 43, wherein providing a seal
2 signal includes comparing an amplitude of the force with a
3 threshold.

1 47. The method of claim 46, wherein providing a seal
2 signal includes making the comparison during a window.

1 48. The method of claim 43, wherein providing a seal
2 signal includes comparing a rise-time of the force with a
3 threshold.